

REMARKS/ARGUMENTS

Claims 9-16 are pending herein. Claims 1-8 have been cancelled hereby in favor of new claims 9-16. Applicants respectfully submit that no new matter has been added.

1. Applicants respectfully submit that the §112, second paragraph rejection of claims 1-8 is moot in view of the cancellation of these claims.

Accordingly, Applicants respectfully request that the above rejections be reconsidered and withdrawn.

2. Claims 1-3, 7 and 8 were rejected under §102(e) over Hess. To the extent this rejection might be attempted to be applied against new claims 9-11, 15 and 16, it is respectfully traversed.

New independent claim 9 recites the liquid-drop spraying device, comprising a liquid sump comprising a plurality of pressure chambers, each pressure chamber including an outlet and inlet in communication with the common fluid supply passage via an inlet passage, and a vibration source for changing the volume of the liquid sump including at least two of the plurality pressure chambers.

New independent claim 16 recites a liquid-drop spraying device formed by a method comprising the steps of providing a liquid sump comprising a plurality of pressure chambers each having an outlet and an inlet in communication with a common fluid supply passage via an inlet passage, providing a vibration source for changing the volume of the liquid sump, and including at least two of the pressure chambers, and integrating the liquid sump with the vibration source. The liquid sump and the vibration source are separately provided as separate members before the integrating step, and at least two of the pressure chambers of the liquid sump are provided with respect to the vibration source such that vibrations generated by the vibration source are transmitted to the liquid sump to change the volume of the at least two pressure chambers.

Without referring to any particular figures or passages of the applied reference, the PTO merely asserted that Hess discloses “a liquid drop spraying device having a liquid sump 9 consisting of a pressure room and outlet 15 and a vibration source 10” (Office Action, page 3, section 5).

Hess discloses a liquid droplet spray device which creates an atomized droplet spray for an inhaler or aerosolized drug delivery system. Referring to Figs. 1 and 2 of Hess, a droplet spray device 5 contains a space 9 for storing a liquid substance (drug) 4. Column 4, lines 30-33 and 34-37 of Hess disclose that “each spray device may comprise a sealant to maintain substance 4 within space 9 and which is peeled off when the spray device is aligned with mouthpiece 6,” and alternately, that “it is also possible that there is only one spray device 5 which is re-filled whenever necessary from reservoir 3 by way of a micro-valve 17 controlling this filling.”

Applicants respectfully submit, however, that even if the PTO was broadly assuming that the space 9 of Hess’s spray device 5 (shown in Figs. 2-4) corresponds to a common passage communicating with a tapered cavities 13 via an inlet (e.g., the widest portion of the cavity 13 closest to the space 9 and opposing the output channel 15), Hess still does not disclose that each of the tapered cavities has an inlet in communication with the space 9 via an inlet passage, as recited in claim 9.

Further, Applicants respectfully submit that the liquid substance 4 of Hess does not suction into the tapered cavities 13, or into the space 9, due to any deformation of the vibrating element 10 that reduces the volume of the cavity or the space. Rather, fluid flow into the space 9 from the reservoir 3 through the supply tube 7 is controlled by a micro-valve and fluid flow into the cavities from the space is not restricted or controlled.

On the other hand, the present invention involves a liquid sump that suctions liquid into the pressure chambers from the common supply passage through the inlets via an inlet passage and ejects droplets through outlets in response to the pressure and volume changes produced by a singular vibration source (piezoelectric/electrostrictive element, for example) provided over a plurality of adjacent pressure chambers.

Moreover, Applicants respectfully submit that there is no disclosure in Hess of the specific method steps used to form the claimed liquid-drop spraying device of claim 16.

In view of the above, Applicants respectfully submit that independent claim 9, claims 10-15 depending directly or indirectly therefrom, and independent claim 16 define patentable subject matter over the art of record. Accordingly, Applicants respectfully request the above rejections be reconsidered and withdrawn.

If the Examiner believes that contact with Applicants' attorney would be advantageous toward the disposition of this case, the Examiner is herein requested to call Applicants' attorney at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-1446.

Respectfully submitted,

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Date



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